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| 10/750,521 | 12/31/2003 | Brian H. Sherman | MOL-001 | 1975 |

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| EXAMINER | |
|---|---|
| KIM, EUNHEE | |
| **ART UNIT** | **PAPER NUMBER** |
| 2123 | |

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| 01/29/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/750,521 | SHERMAN ET AL. | |
| | Examiner | Art Unit | |
| | Eunhee Kim | 2123 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *01 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) *20-30 and 34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19 and 31-33* is/are rejected.

7)☒ Claim(s) *32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/10/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. Claims 1-19 and 31-33 are elected for examination, and Claims 20-30 and 34 are withdrawn from consideration because claims are directed to invention I.

### *Election/Restrictions*

2. Applicant's election with traverse of 1-19 and 31-33 in the reply filed on 10/01/2007 is acknowledged. However, the applicant has not alleged why the requirement is not proper, and this is not found persuasive because as previously pointed out in the restriction requirement, the inventions are unrelated, they have acquired a separate status in the art, require different fields of search. The requirement is still deemed proper and is therefore made FINAL.

### *Claim Objections*

3. Claim 32 is objected to because of the following informalities:

As per claim 32, the phrase "the node elements" and "the bond elements" would be better as "the node element" and "the bond element".

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1-19, 31, and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Shen et al.(US patent No. 6,636,781).

As per claim 1, Shen et al. discloses a node element for use in assembling a plurality of structural elements (Fig. 1A-1B) comprising:

a body (Fig. 1A-1B);

one or more connection ports disposed relative to the body, at least one connection port capable of being coupled to an adjacent structural element (Fig. 1A-3); and

a computational unit disposed within the body, wherein the computational unit receives information of physical characteristics of the node element from the connection port (Fig. 4 and the description, Col. 5 lines 1-53).

As per claim 2, Shen et al. discloses a communications device capable of providing node element information (Col. 4 lines 3-20, Col. 9 lines 65-67, Col. 10 lines 1-12, Col. 14 lines 41-55).

As per claim 3, Shen et al. discloses wherein the adjacent structural element comprises a bond element (Fig. 1A-3).

As per claim 4, Shen et al. discloses wherein the computational unit uses the information of physical characteristics to determine a topology of the node element (Col. 10 lines 44-67).

As per claim 5, Shen et al. discloses wherein the information of physical characteristics is obtained from a sensor disposed within the node element (Fig. 5-10 and the description, Col. 4 lines 3-20).

As per claim 6, Shen et al. discloses a sensor that detects information about at least one of movement of the node element with respect to a bond element, rotational orientation with respect to the connection port, movement of the node element with respect to one of the structural elements, position or movement of the node element with respect to an external spatial orientation reference point, and physical stress upon the node element (Fig. 5-10 and the description, Col. 4 lines 3-20, Col. 5 lines 55-62, Col. 8 lines 9-14, Col. 10 lines 5-25).

As per claim 7, Shen et al. discloses wherein the sensor comprises at least one of a rotational sensor, an accelerometer, a compass, an inclinometer, a magnetometer, and a gyroscope (Col. 5 lines 55-62).

As per claim 8, Shen et al. discloses wherein the computational unit receives the information of physical characteristics from the sensor (Fig. 4 and the description, Col. 5 lines 55-62, Col.).

As per claim 9, Shen et al. discloses wherein the sensor stores or provides information of changes in physical characteristics of the node element (Col. 8 lines 9-14, Col. 10 lines 13-25, Col. 12 lines 21-30).

As per claim 10, Shen et al. discloses a control device that manipulates a physical characteristic of the connection port (Fig. 4 and the description, Col. 8 lines 9-14, Col. 10 lines 13-25, Col. 12 lines 21-30).

As per claim 11, Shen et al. discloses wherein the control device comprises an actuator, a vibrating unit, or a light emitting diode.

As per claim 12, Shen et al. discloses wherein the communications device transfers data from the computational unit to one of the structural elements (Fig. 4 and the description, Col. 6 lines 4-37, Col. 8 lines 9-14, Col. 10 lines 13-25, Col. 12 lines 21-30).

As per claim 13, Shen et al. discloses wherein the communications device provides data from the computational unit to an external computer system (Col. 1 lines 26-31).

As per claim 14, Shen et al. discloses wherein the communications device exchanges information between the external computer system and the computational unit (Col. 1 lines 26-31).

As per claim 15, Shen et al. discloses a power transmission interface capable of transferring power from an external source through at least one of the connection ports and to the node element (col. 4 lines 43-47, Col. 6 lines 1-3).

As per claim 16, Shen et al. discloses wherein the communications device comprises a wireless transmitter (Col. 4 lines 48-57).

As per claim 17, Shen et al. discloses a bond element for use in assembling a plurality of structural elements (Fig. 1A-1B) comprising:

a body (Fig. 1A-1B);

a first and a second connection port disposed relative to the body, at least one of the first and the second connection ports capable of being coupled to an adjacent structural element (Fig. 1A-5 and the description); and

a computational unit disposed within the body, wherein the computational unit receives information of physical characteristics of the bond element from the first or second connection ports (Fig. 4 and the description).

As per claim 18, Shen et al. discloses a sensor that detects information about at least one of movement of the bond element with respect to a structural element, rotational orientation with respect to the connection port, position or movement of the bond element with respect to an external spatial orientation reference point, and physical stress upon the bond element (Fig. 5-10 and the description, Col. 4 lines 3-20, Col. 5 lines 55-62, Col. 8 lines 9-14, Col. 10 lines 5-25).

As per claim 19, Shen et al. discloses wherein the sensor comprises at least one of a rotational sensor, an accelerometer, a compass, an inclinometer, a magnetometer, and a gyroscope (Fig. 5-10 and the description, Col. 4 lines 3-20, Col. 5 lines 55-62, Col. 8 lines 9-14, Col. 10 lines 5-25).

As per claim 31, Shen et al. discloses a structural modeling kit for use in assembling a plurality of structural elements (Fig. 1A-1B) comprising:

at least one bond element comprising:

a body (Fig. 1A-1B); and

a first and a second connection port disposed relative to the body of the bond element (Fig. 1A-5); and

at least one node element comprising:

a body (Fig. 1A-1B);

a node connection port disposed relative to the body of the node element, capable of being coupled to the bond element (Fig. 1A-5); and

a computational unit disposed within the body of the node element, wherein the computational unit receives information of physical characteristics of the node element from the node connection port (Fig. 4 and the description).

As per claim 33, Shen et al. discloses wherein at least one of the node element or the bond element comprises a communications device capable of providing the information of physical characteristics to an external computer system (Col. 1 lines 26-31).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al. (US patent No. 6,636,781), in view of Tempelman (U.S. Patent No. 5,947,745).

Shen et al. teaches most all of the instant invention as applied to claims 1-19, 31, and 33 above.

Shen et al. teaches the node elements and the bond elements are coupled (Fig. 1A-3) except a portion of a molecular model.

Tempelman teaches a portion of a molecular model (Fig. 1-3).

Shen et al. and Tempelman are analogous art because they are both related an assembling model.

Therefore, it would have been obvious to one of ordinary skill in the art of at the time the invention was made to have included the representation of a molecular model of Tempelman in a distributed control and coordination of autonomous agents system of Shen et al. because the representation of a molecular model is a well known process in an assembling model, and Tempelman teaches an improved model that represents electron pair-sharing and simultaneous allosterism or spin capacity about the axis established along the line of the covalent bond between the two shared electrons of the two conjoined atoms with simplicity (Col. 1 lines 10-40).

*Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hildebrandt et al. (U.S. Patent No. RE. 33,785) discloses method for sequentially collecting and analyzing real time data with interactive monitoring.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eunhee Kim whose telephone number is 571-272-2164. The examiner can normally be reached on 8:30am-5:00pm Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eunhee Kim
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12/7/2007

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